

OTOLOGY

Management of acute idiopathic sensorineural hearing loss: a survey of UK ENT consultants

Trattamento dell'ipoacusia neurosensoriale idiopatica improvvisa: un'indagine tra gli specialisti ORL del Regno Unito

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SUMMARY

Acute sensorineural hearing loss is a rare event. As yet, there is no standard agreed treatment of this condition because there appears to be little reliable evidence that any one treatment will improve the hearing in these cases. This postal questionnaire was conducted to ascertain the current management of unilateral, acute, idiopathic sensorineural hearing loss by ENT consultants in the UK to see if there is at least a consensus of approach which might lay the foundation for an agreed treatment. Approximately 60% of consultants would admit a patient presenting with these symptoms and only 2% would not prescribe any form of treatment. Of those who do treat the patient, virtually all (99.2%) would prescribe steroids.

KEY WORDS: Sudden hearing loss • Sensorineural hearing loss • Treatment outcome • Prognosis

RIASSUNTO

L'ipoacusia neurosensoriale acuta è un evento raro. Ancora non esiste un trattamento standard per questa condizione, poiché sembra che per ciascun tipo di protocollo terapeutico non ci siano prove evidenti di miglioramento dell'udito. Questo questionario è stato realizzato per verificare la gestione attuale da parte degli specialisti ORL del Regno Unito riguardo l'ipoacusia neurosensoriale su base idiopatica, acuta, unilaterale, per verificare la presenza di un orientamento comune che portasse a gettare le basi per un trattamento concordato. Circa il 60% dei consulenti ricovererebbe un paziente che presenta questi sintomi e solamente il 2% non prescriverebbe alcun trattamento. Tra coloro che decidono di sottoporre a terapia il paziente, potenzialmente tutti (99,2%) prescriverebbero steroidi.

PAROLE CHIAVE: Ipoacusia improvvisa • Ipoacusia Neurosensoriale • Risultato del trattamento • Prognosi

Acta Otorhinolaryngol Ital 2011;31:85-89

Introduction

Acute idiopathic sensorineural hearing loss may be defined as a hearing loss of 30 dB or more, over at least 3 contiguous audiometric frequencies, that develops over 72 hours or less. This is a medical emergency and various possible causal factors have been postulated. The optimal treatment modality is not known either, and this is reflected in the large number of publications suggesting the 'best' treatment modality. Some cases will improve spontaneously. Trans-tympanic steroid injections are the most recent form of treatment being studied and may provide hope for these patients, however due to the rarity and the unpredictable natural history of the disorder it is difficult to design and conduct a study on this condition in order to show a statistically significant difference.

Material and methods

A postal questionnaire was sent to consultant members of the British Association of Otolaryngology-Head & Neck Surgery (BAO-HNS). This was accompanied by a case scenario of a patient with acute, unilateral, idiopathic loss (Appendix 1).

Results

A total of 540 questionnaires were posted by a single mailshot. There were 266 replies (49.2% response rate). Some of the questionnaires were not fully completed and this is reflected in the totals of the individual results. The percentage figures given for a choice are those for completed questions only.

In reply to the question regarding the admission of this patient with unilateral, acute, idiopathic sensorineural hearing

loss, 153 (59.1%) stated they would admit him. Of those who would not admit the patient, only one would also not arrange a follow-up in the clinic. The remainder would arrange a follow-up at intervals ranging from 2 days to 6 months with a median value of 14 days. Of those who would admit the patient, only 29.7% (44/153) had a written protocol for patient management. Of the total (239) who would treat the patient, whether they admitted him/her or not, 23.8% (57/239) had a written protocol. The proposed in-patient stay varied between one and 10 days, mean 3.7 days (Standard Deviation (SD) 1.9). The patient would be reviewed in the clinic after a median of 14 days following discharge from hospital. Two consultants said they would not follow the patient up after an in-patient stay.

Nearly all, 93.2% (248/266), would prescribe some form of treatment. Of these, 96% (238/248) would prescribe oral steroids alone or in combination with other drugs, and 3 consultants (1.2%) in this group would give steroids intra-tympanically. The duration of the steroid course prescribed varied from 2 to 30 days, (median 7 days).

Low molecular weight dextran would be prescribed by 58 consultants (23.4%), 96 (38.7%) carbogen, 75 (30.2%) betahistine and 45 (18.1%) aspirin. The duration of carbogen prescribed varied from 1 to 14 days (median 3 days). Fifteen consultants (6.0%) suggested antiviral agents, such as acyclovir. Peripheral vasodilators or calcium antagonists were used by 18 consultants (7.3%). Less commonly used treatments were hyperbaric oxygen (HBO) which was prescribed by 5 consultants (2.0%), heparin by 4 consultants (1.6%) while 3 (1.2%) would give antibiotics. Other modalities of treatment suggested, included methotrexate, practolol, Dyazide, tranquillisers and plasma exchange.

Of those consultants who would treat the patient, 30.8% (76/247) would use only one form of treatment. The remainder would prescribe two or more drugs. The number of combinations of drugs and how frequently they would be prescribed are outlined in Figure 1. Full details of the exact combinations used are shown in Figure 2.

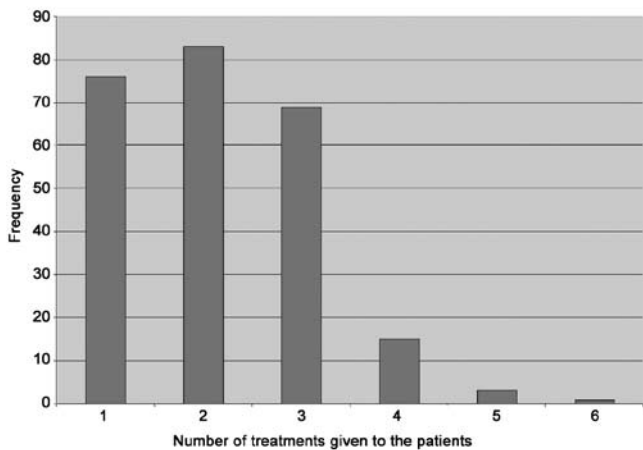


Fig. 1. Number of methods of treatment administered by each Consultant.

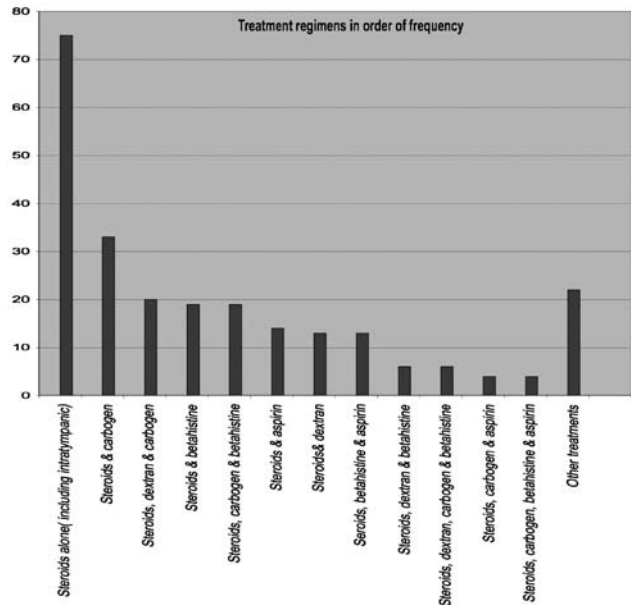


Fig. 2. Treatment combinations in order of frequency.

The question regarding whether they thought their treatment would improve the patient’s prognosis was answered by 253 consultants. A modest number, 68 (26.9%) stated that they thought the prognosis would be improved by medical treatment and 41 (16.2%) stated that they thought that medical treatment would not improve recovery. The majority of 144 consultants (56.9%) were unsure about the efficacy of medical treatment.

Of the 251 consultants who replied to the question on timing of the second audiogram after presentation, 140 out of 251 (55.8%) stated that they would repeat it after one or two days. A further 71 (28.3%) would repeat the audiogram within one week.

The consultants who would admit the patient (133) were asked about the investigations that they would undertake. These are outlined in Figure 3.

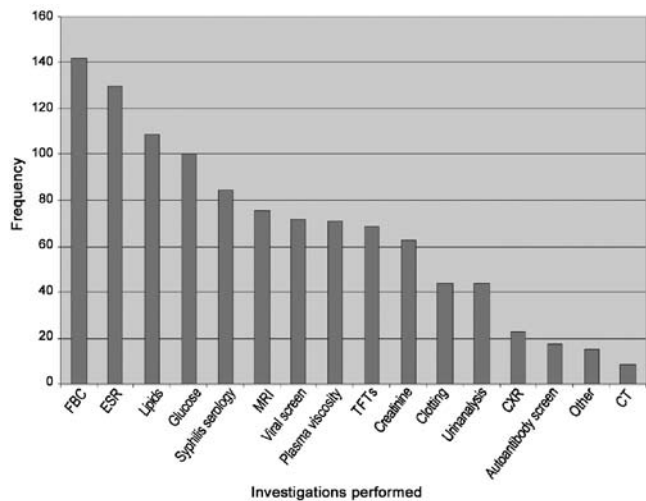


Fig. 3. Investigations performed by each consultant whilst patient is hospitalised.

Discussion

Acute idiopathic sensorineural hearing loss is a rare occurrence. The exact incidence of acute sensorineural hearing loss is not known, but is estimated to be between 5 and 20 per 100,000 persons/year and varies with age¹. This condition may be extremely distressing for the patients affected as it has a significant impact on their ability to interact socially and they may be concerned that there is some serious underlying pathological condition. Various causes, including viral²⁻⁵, vascular⁶ or autoimmune conditions⁷, have been postulated. As yet, no single causal agent has been identified and the aetiology may be multifactorial.

Many different treatment regimens have been suggested. These included the use of steroids⁸ (which may be given intra-tympanically)⁹⁻¹⁰, low molecular weight dextran¹¹, carbogen¹², hyperbaric oxygen¹³, LDL apheresis¹⁴, acyclovir¹⁵ and even stellate ganglion block¹⁶. There is little convincing evidence that any one treatment produces any improvement in the audiometric results¹⁷. It is, however, quite difficult, for various reasons, to design and conduct a study on this condition, in order to show a statistically, and more importantly, a clinically significant difference. There are many reasons for this. First of all, the condition is relatively uncommon, and recruitment of an adequate number of patients, to allow a double-blind clinical trial to be conducted, would be difficult. The second problem is that the disorder is most likely not the result of a single disease process. A drug may help one of the causes, but not another, thus resulting in confusing outcomes. A third difficulty is that of spontaneous recovery of hearing. A spontaneous recovery rate of approximately 60% has been quoted¹⁸, although the ranges in the literature vary considerably (32-89%)^{19,20}.

The prognosis is not predictable. Variables which may worsen the prognosis, include increasing age of the patient, number of days before presentation, a more severe initial mean hearing loss and the presence of vertigo^{21,22}. A better prognosis may be associated with early hearing improvement²³ and prompt administration of corticosteroids^{8,24} but this is controversial²⁵. These factors may need to be taken into account when analysing results.

There is no general agreement regarding the definition of what constitutes acute, idiopathic sensorineural hearing loss. There is no consensus regarding the time period of evolution (in order to classify as acute) or which investigations need to be performed (in order to classify as idiopathic). One definition in the literature is "a loss of 30 dB at three contiguous frequencies within three days"⁸.

The results of our study show that 60 percent of consult-

ants would admit a patient with this condition to hospital, with an average in-patient stay of 3.7 days. Nearly all (98.0%) would prescribe steroids, for a mean course of 9.1 days. A further 3 consultants (1.2%) would prescribe intra-tympanic steroids.

Dextran 40 is still available, but has recently not been prescribed due to concerns raised regarding its safety²⁶, especially in elderly patients. Low molecular weight dextran increases plasma viscosity, and should be used with caution in patients with heart disorders or renal impairment, since pulmonary²⁷ or renal failure²⁸ may result and deaths have been reported²⁹. Whilst this infusion is being administered, the patient's urine and haematocrit should be closely monitored.

A magnetic resonance imaging (MRI) scan of the internal auditory meatus should be performed in all cases³⁰, even if their hearing loss improves^{31,32}.

A study of 67 patients with acute sensorineural hearing loss, by Nageris and Popovtzer found 24 patients had an acoustic neuroma; of these 4 (16.7%) recovered hearing after 1 month³³. Rarely, a vestibular schwannoma may present in this manner^{34,37}. Further investigations may help to identify factors which contribute to the hearing loss.

The United States National Institute of Health is currently running a multi-centre randomised controlled trial³⁸ to compare the efficacy of oral prednisolone and intra-tympanic methyl-prednisolone for the treatment of moderate to severe sensorineural hearing loss. Details of this study can be found on the following web site: www.clinicaltrials.gov/ct/show/NCT00097448.

Conclusions

It is interesting that so many consultants admit patients with this condition, despite the lack of reliable evidence that any one treatment is of proven benefit. One may assume that this is due to our wish to do everything possible for the patient and also, in part, because of the fear of litigation.

The vast majority (89%) of respondents would treat acute unilateral sensorineural hearing loss with steroids. A further 1.2% would give intra-tympanic steroid injections. This practice may change pending the results of the United States National Institute of Health Study.

All patients should have an MRI scan, even if they have recovered from the hearing loss.

From our questionnaire, it can be seen that the treatment of this condition remains controversial. It is important that each patient should be thoroughly investigated and any treatable cause identified.

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Received: December 2, 2010 - Accepted: January 25, 2011

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Appendix 1

A 60-year-old male presents with an acute, right-sided hearing loss. This had occurred less than 24 hours previously and was not associated with any other otological or neurological symptoms. The patient is otherwise medically fit and well and has never had any problems with his ears in the past. Pure tone audiometry shows a flat, 60 dB sensorineural hearing loss on the right. Hearing in the left ear is 20 dB. How would you manage him?

1. Would you admit him to hospital? Yes/No

2. If you would not admit him, when would you follow him up in your clinic?

3. Do you have a standard written protocol for these patients?

4. What treatment would you give this man? (Please tick)

- | | | |
|-------------|-------------------|----------------------|
| Steroids | Dextran 40 | Carbogen |
| Betahistine | Heparin | Antibiotics |
| Aspirin | Hyperbaric oxygen | Other (Please state) |

5. If applicable, how many days would you

- a) Treat him with steroids?days
- b) Treat him with Carbogen?days
- c) Keep him in hospital?days

6. Do you think your management will improve his prognosis? Yes/No/Don't know

7. How frequently would you repeat the audiogram?
Daily / Every other day / Everydays / Other (Please state).

8. While he is in hospital, which of the following investigations would you perform? (Please tick).

- | | |
|-------------------------------|-----------------------|
| FBC | Clotting studies |
| ESR | Urinalysis |
| Plasma viscosity | Viral antibody screen |
| Lipids | Syphilis serology |
| Glucose | CXR |
| Creatinine | CT temporal bone |
| TFT's | MRI temporal bone |
| Other tests
(Please state) | |

9. After discharge from hospital when would you review him in clinic?
.....days /weeks